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ABSTRACT

The paper describes a study in which 34 primary class students were identified as high risk by the Guide to the Child's Learning Skills (GCLS), a teacher-based instrument for screening and followup. It is reported that an 8-week period of instruction using the Flying Start materials, experimental Ss showed significant improvement on the Columbia Mental Maturity Scale, Porteus Maze Quotients, and the GCLS. Two brief case studies are included. (CI)

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IMPACT OF EARLY INTERVENTION ON LEARNING
EVALUATION OF THE
STOTT "FLYING START" LEARNING TO LEARN PROGRAMME
A SCOTTISH STUDY

A Paper presented at the First World
Congress on Future Special Education
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Impact of Early Intervention on Learning
Evaluation of the
Stott "Flying Start" Learning to Learn Programme
A Scottish Study

The objectives of this study were:

- a) to evaluate the Guide to the Child's Learning Skills (GCLS) as a teacher-based instrument for screening and follow-up;
- b) to determine the efficacy of the "Flying Start" materials in modifying inappropriate learning behaviour.

In recent years the Stott hypothesis has gained in credibility and currency. The hypothesis, simply enunciated, is that learning failure may be a product of inappropriate behaviours in the learning situation rather than of low level of cognitive performance, and that what we should be doing as educational psychologists, remedial teachers, etc., is to look, not at test scores, but at the child's problem-solving behaviour, and subsequently to monitor progress and note crucial points of improvement. The Guide to the Child's Learning Skills was designed for the classroom identification of children who use faulty approaches to learning, such as may be due to temperamental, cultural or neurological factors, or a combination of handicapping events.

Throughout the Spring and Autumn Term of 1974/75 a series of pilot studies was carried out in schools in the Edinburgh area to ascertain teachers' reactions to the Guide and its suitability for assessing children's problem-solving approaches, and to try out various ways of organizing groups to use the Flying Start materials in Infant classrooms. It was found that the Guide did serve a very useful purpose in helping teachers to be more precise in their description of "learning behaviours",

notably those which are inimical to the learning process. Most of the criticisms made of the Guide by teachers in the pilot studies have since been met in the version of the Guide currently used. It was further ascertained that the Guide offered a basis for identifying children "at risk" for learning problems. The criterion of "at risk" was held to be: those children who scored one or more "severe" signs, or two or more "definite" signs on the Guide.

Central to this study is the hypothesis that children so identified by the GCLS and exposed to a programme of structured games such as Flying Start should demonstrate, after such exposure, significantly altered problem-solving approaches as compared with other groups. Furthermore, any such change should be reflected in significantly improved learning behaviour profiles as recorded by teachers. This raises directly the question of assessing the aptness of the problem-solving behaviours used. Standardised test scores cannot supply the information required for a detailed and on-going analysis of change in learning behaviours. What was needed was a measure of changes in the modes of attack in the problem-solving situation.

Resulting from the pilot studies two non-verbal tests were selected in view of the possibility that some of the subjects would refuse to respond verbally in testing situations, and that the actions of pointing, drawing, etc., would be less threatening. Those chosen were the Porteus Maze Test V and the Columbia Mental Maturity Scale (CMMS).

The Porteus Maze Test yielded two scores: the usual test quotient, and a score measuring flexibility or adaptation, already described in Dr. Marie O'Neill's contribution.

The Columbia Maturity Scale assesses not only the level of mental functioning but also offers an opportunity to observe the use of strategies of rehearsal/reflectivity.

Children who have been exposed to the Flying Start programme will have been trained to become strategy wise in the learning situations. Central to the behavioural approach to learning failure is the view that children's faulty learning behaviours are largely the reflection of inadequacies in their manner of coping with day-to-day situations. If more efficient learning styles have been developed by means of the Flying Start programme, the improvements should be transferred to classroom learning. This result should then be apparent in four ways:

- a) Fewer and less serious markings by their teachers on the GCLS.
- b) Since children working with the Flying Start materials will receive specific training in planning and problem-solving strategies, their ability to plan ahead should be demonstrated by improved scores on tasks which require such. In particular their Porteus Maze Test quotient scores should show an increase.
- c) Additionally, children trained in planning strategies to problems should approach a task requiring planning in a relaxed manner and this should result in work which is relatively well adapted to its objective rather than disorganized, irregular or over-conforming. Thus such children should show greater changes in the Porteus score measuring flexibility and adaptability.
- d) Children receiving specific training in the value of deliberating over decision making should show an increased score on Columbia Mental Maturity Scale.

The Design of the Experiment

The sample was drawn from the 145 children attending first-year primary classes in four schools in the Borders region of Scotland in August 1975. A period was allowed for the children to get used to the experimenter, and the teachers to get to know the children and to familiarize themselves with the GCLS. They completed this towards the end of November, and by the above criteria 34 "at risk" children were identified. There was no marked variation in the teachers' individual preference for one category or another, but, as Beilin (1959) noted, they collectively identified a greater amount of over-reacting than of under-reacting behaviours.

The "high risk" children were divided randomly into Experimental (E) and Control (C) groups. Their mean scores for each category of faulty learning style were very similar. All were pre-tested on the Porteus Maze V and the CMMS. The writer worked with them, in eight groups (four E and four C) in their schools for two half-hour sessions over eight weeks, making sixteen sessions in all. With the E groups the Flying Start materials, as recommended in the manual, were used, comprising jigsaw puzzles, letter bingo, concept cards, etc. Both C and E groups thus received the same individual attention but were exposed to different experiences.

At the end of the eight-week period, the Guide was completed by the teachers for each of the 34 children and the CMMS and Porteus Maze V were readministered.

Results

Table 1 shows the mean pre- and post-test scores on the three tests for which results are available to date. It is seen that all of them showed significant improvements for the Flying Start (E) group. Although the Control group showed some improvements in scores, in none of the tests did these reach the level of significance.

Table 1 Mean Pre- and Post-Training Scores on the Tests Used.

<u>Group</u>	<u>Pre</u>	<u>Post</u>	<u>Change</u>	<u>t</u>	<u>P</u>
<u>Columbia Mental Maturity Scale</u>					
Flying Start (E)	87.0	100.8	+13.8	4.83	< 0.01
Flying Start (C)	87.7	90.3	+2.6	0.80	N.S
<u>Porteus Maze Quotients</u>					
Flying Start (E)	88.69	97.06	+8.37	3.78	< 0.01
Flying Start (C)	84.44	88.79	+4.35	1.47	N.S
<u>Guide to the Child's Learning Skills</u>					
Flying Start (E)	10.29	2.08	-8.21	3.28	< 0.01
Flying Start (C)	9.35	7.88	-1.47	1.43	N.S

In the post-test of the CMMS, the E group were notable for their greater response time, frequent eye-scanning movements, looking, checking, etc., and generally not "blurring out" their answers. The Control group showed little difference from pre-test, their behaviour being marked by either inhibition or guessing.

The mean pre- and post-test scores as recorded on the GCLS are shown as figures and in the form of histograms in Figure 1 for the C, and Figure 2 for the E group. Both show an improvement, but that for the C

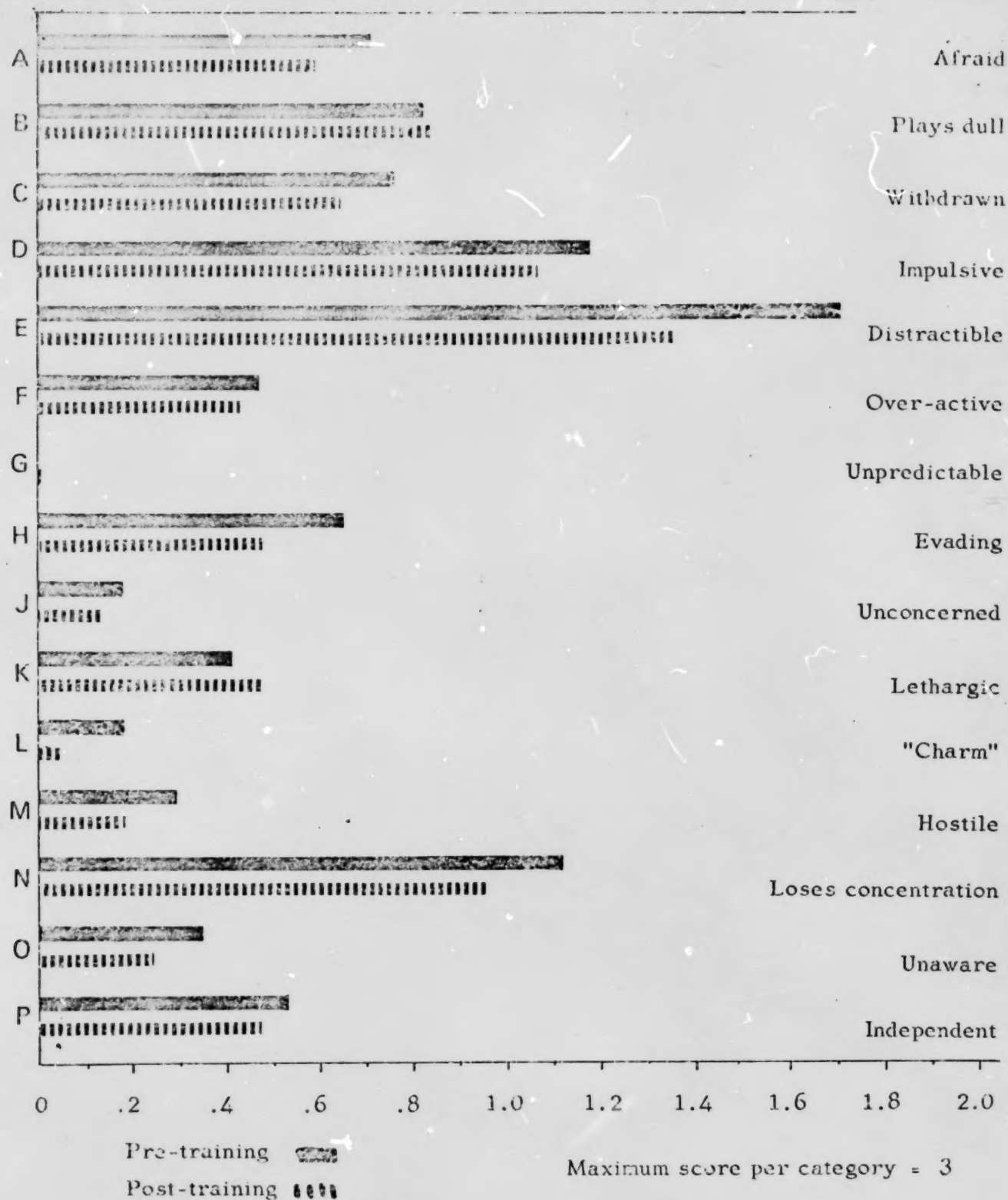


Figure 1. Means for inappropriate Learning Styles [CONTROLS]

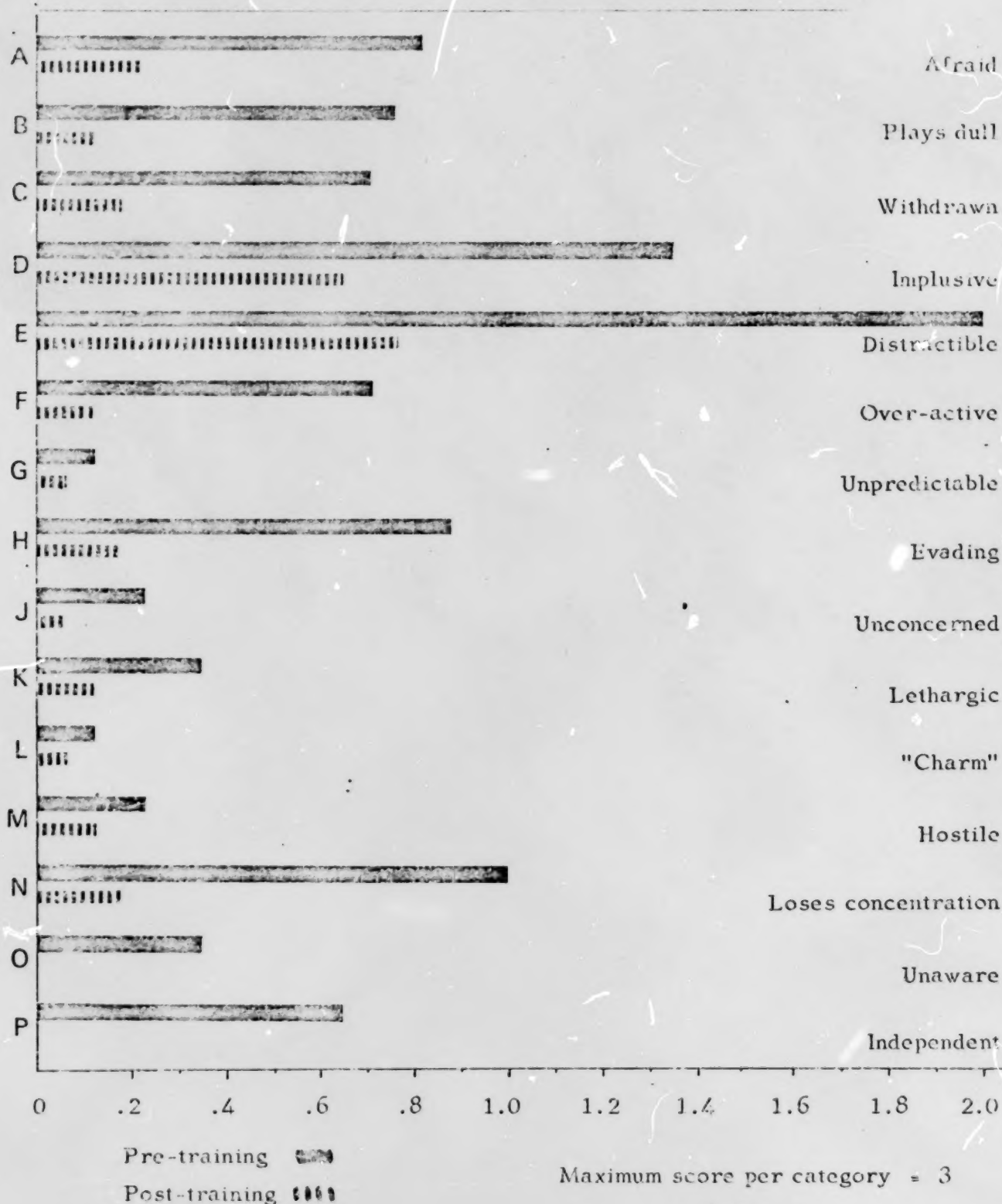


Figure 2. Means for Inappropriate Learning Styles. ["FLYING START"]

group is slight and not significant, while that for the E group is so at the 0.01 level ($t < 3.64$). The falls in the mean scores of the E group for the categories of impulsivity, distractibility, evasion and loss of concentration are particularly striking.

The Porteus Flexibility score as described by O'Neill has long been considered a doubtful method of scoring a child's tracing largely because of the subjective nature of evaluating the turns made in comparison with Porteus' guidelines. O'Neill and Stott have attempted to get round this difficulty by developing an objective technique of scoring children's efforts. This involves placing a grid over the effort and counting the number of squares that the child's line cuts. The rationale is that a good solution is also an economical one. Hence the smaller the number of squares cut, the better the solution. This method has been applied to the efforts of The Control Group (n=17) and to 16 of the Flying Start (E) group. One effort (that of Duncan, Figures 6 and 7) has been withheld since his pre-test attempt is not productive of a score although it can be immediately classified clinically. There are still a number of questions to resolve concerning this method of scoring and so Table 2 must be considered as a preliminary analysis of data.

TABLE 2 Mean Pre- and Post-Training Scores on Porteus Mazes Using O'Neill-Stott Scoring Procedure.

<u>Group</u>	<u>Number of Squares Cut</u>			<u>t</u>	<u>P</u>
	<u>Pre</u>	<u>Post</u>	<u>Change</u>		
Flying Start (E) (n=16)	128	97	-31	5.01	0.01
Flying Start (C) (n=17)	133	122	-11	0.94	N.S

Two Illustrative Case Descriptions.

David was in his second year in the Infant Department. His classroom behaviour was characterised by a hyperactivity of a degree that disturbed even this most active of classrooms. He frequently chattered and seemed incapable of keeping his attention on one thing for any length of time. His level of achievement in the classroom was described as "low" and this was certainly borne out by examination of his written and oral work. On initial assessment he scored 85 on the CMMS and his first attempt at the Porteus Maze Test is reproduced as Figure 3. By inspection, this is seen to be a highly disorganized performance and is to be contrasted with his post-test performance (Figure 4), where a much more controlled attempt is in evidence. His initial learning behaviour profile reflects his over-reacting behaviour (Figure 5).

Throughout the training sessions David presented something of a management problem. Initially, he would only stay for a few minutes but gradually, as he became interested in the activities, he demonstrated greater control, a degree of planning, and a less erratic behaviour in contrast to his behaviour on first acquaintance. On post-test David's CMMS score rose to 91. His performance was characterised by greater time spent scanning the cards, inhibition of impulsive responses, and frequent eye movements interpreted as checking and double-checking. The final CCLS indicated a marked decrease in over-reacting behaviours (Figure 5). As a result of these observations, the tentative conclusion offered is that David's initial inappropriate learning style had been due more to general cultural influences than to any functional disorder.

In contrast to David's "inconsequent" type behaviour was Duncan's "unforthcomingness". He was excessively shy and timid. His teacher found it difficult to elicit any conversation from him and reported that he frequently burst into tears when under normal classroom pressures. He seemed to be satisfied with a static level of competence, he rarely tried, and the writer experienced great difficulty in establishing rapport with him in the pre-tests. His CMMS performance of 84 was characterised by frequent refusals and hesitant pointing unaccompanied by any verbal comment. The Porteus Maze Test was met by refusal (Figure 6). The general unforthcomingness is demonstrated by his behaviour profile (Figure 8).

At the end of the sessions, Duncan showed noticeably more confidence on the CMMS and his score increased to 100. This increased confidence is further reflected in the post-test Porteus Maze, which demonstrates a highly competent performance. (Figure 7). Furthermore, the post-test behaviour profile indicates a marked reduction in the degree of severity of unforthcoming behaviours. (Figure 8).

References

- Beilin, H. (1969) "Teachers' and Clinicians' Attitudes Towards the Behaviour Problems of Children: A Reappraisal" Child Development, 30, 9-25.

Fig. 3 DAVID Porteus Maze Pre-training

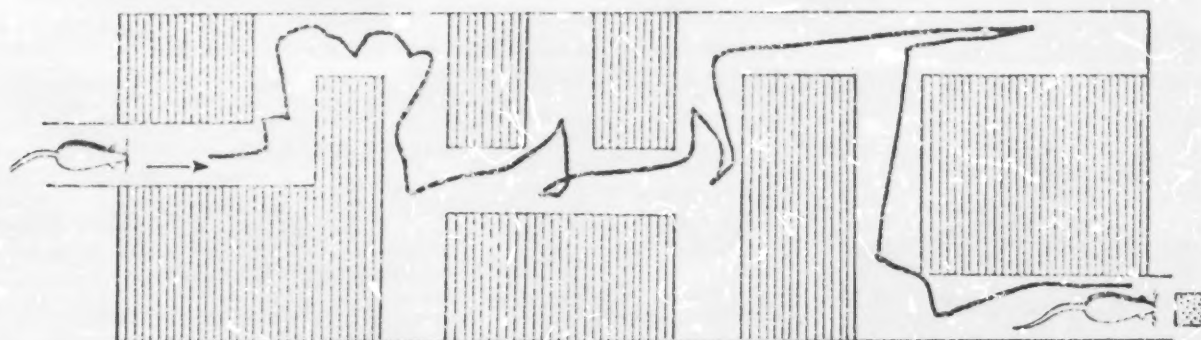


Fig. 4 DAVID Porteus Maze Post-training

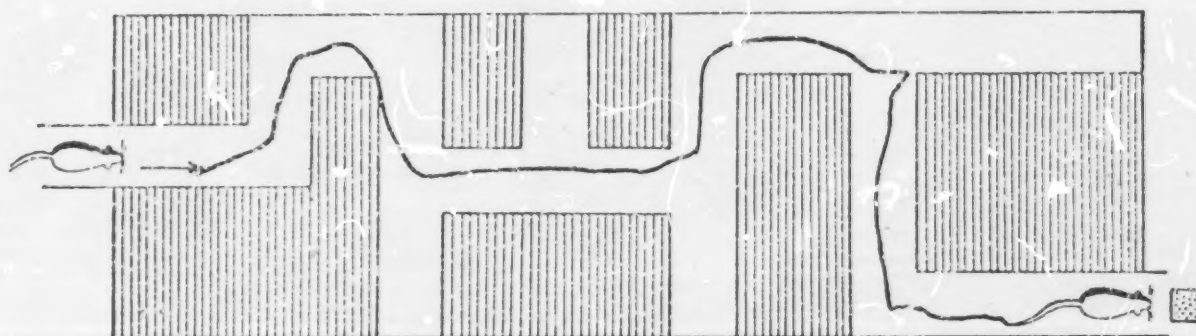


Fig. 5 DAVID Inappropriate learning behaviour (GCLS)

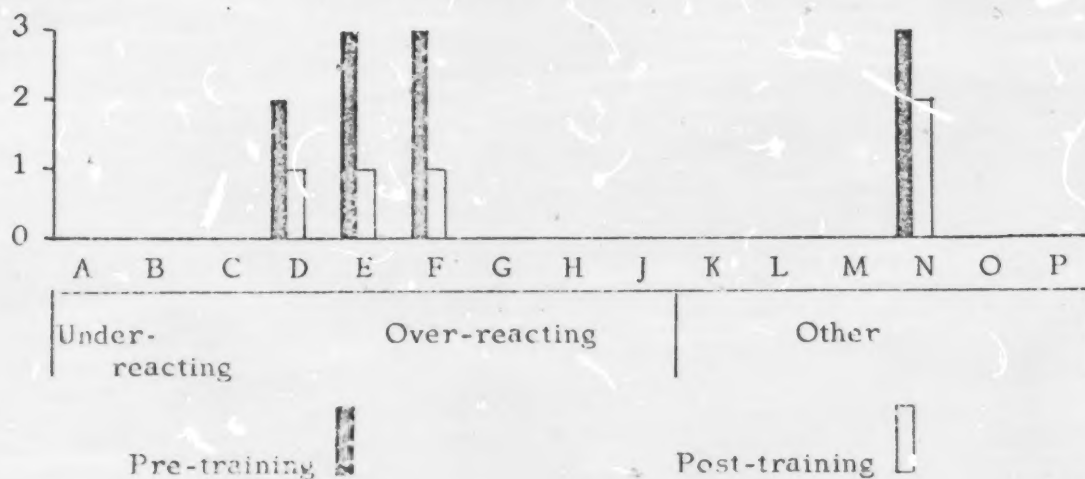


Fig. 6 DUNCAN Porteus Maze Pre-training



Fig. 7 DUNCAN Porteus Maze Post-training

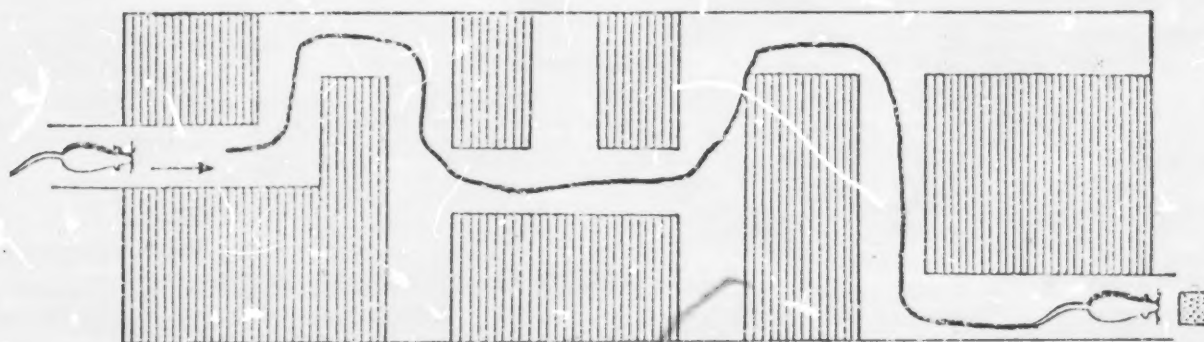


Fig. 8 DUNCAN Inappropriate learning behaviour (GCLS)

